Laser Cellulite Treatment and Laser-Assisted Lipoplasty of the Thighs and Buttocks: Combined Modalities for Single Stage Contouring of the Lower Body

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Background and Objectives: Cellulite and lipodystrophy are often found together, especially in areas of the buttocks and thighs, causing skin surface irregularities. Each of these conditions is currently treated independently as two separate surgical procedures. In our practice, we developed a novel combined approach for the simultaneous treatment of cellulite and lipodystrophy, as a single stage procedure in the same anatomic area. For the treatment of cellulite, we used the Nd:YAG laser at a wavelength of 1,440-nm, along with an innovative 1,000-micron directional side-firing fiber optic laser system. For the treatment of lipodystrophy, the Nd:YAG laser with a 1,440 nm wavelength, along with a fiber optic laser system was used. The objective of this study is to determine the efficacy and safety of a combined approach for the simultaneous treatment of cellulite and lipodystrophy.

Study Design, Patients and Methods: In 2012, 16 subjects with noticeable cellulite, Grade II and Grade III, accompanied by mild-to-moderate lipodystrophy of the lower body received single treatments of the Nd:YAG laser at a wavelength of 1,440-nm along with the 1,000-micron side-firing fiber optic laser system for simultaneous treatments of both cellulite and lipodystrophy. Patients were assessed at baseline and 3–6 months post-treatment by a modified Nurnberger–Muller scale utilized to quantify the cellulite severity. Additionally, patient satisfaction and a global aesthetic improvement scale were used to measure the improvement in lipodystrophy.

Results: Blinded reviewers identified the correct baseline photographs 97% of the time when presented with a set of photographs. The median modified Nurnberger–Muller scale score at baseline was 4.75 ± 1.2 and the average improvement was 2.0 ± 1.2. Global aesthetic improvement scores ranged from 1 to 3 with an average of 1.58 indicating a much-improved overall appearance. Satisfaction was high for both physicians and patients with scores corresponding to extremely satisfied/satisfied.

Conclusion: Precise, effective delivery of laser energy to the dermal-adipose tissue, as well as the deep adipose lipodystrophy is feasible as a safe modality for the simultaneous treatment of cellulite and lipodystrophy in the buttocks and thighs, as a single stage procedure. Lasers Surg. Med. © 2015 Wiley Periodicals, Inc.

Key words: lipodystrophy; cellulite; body contouring; sculpting; two-step approach; single treatment; combination therapy; laser-assisted liposuction; 1440 nm

INTRODUCTION AND BACKGROUND

Body contouring is one of the most popular cosmetic procedures [ASAPS, 2014]. As women reach puberty, fat accumulates in the gynoid regions, notably, the buttocks, thighs, and hips. Approximately 85% of post-pubertal women are affected by gynoid lipodystrophy and edematous fibrosclerotic panniculopathy, commonly called cellulite [1–3]. Cellulite's definition, etiology, anatomy, and diagnostic techniques are subjects of continued debate. In the majority of post-pubertal women, cellulite represents one of the most common topographical alterations to cutaneous surfaces in the posterior-lateral thighs and buttocks. The skin acquires a spectrum of findings ranging from an orange-peel appearance to mattress-like undulations of transverse dimpling, nodularity, and folds. Men also may be afflicted [4]. However, cellulite and lipodystrophy often occur simultaneously and are the bane of existence for millions of women.

Subcutaneous adipose tissue is composed of two layers; a superficial layer, containing compacted fat lobules and copious fibrous septa, and a deeper adipose layer, containing amorphous, irregular fatty pockets. Lipodystrophy resides in the deeper fatty layers. The unattractive protuberances, linked with weight gain, are formed in the deeper adipose layer [5].

Cellulite lies at the interphase of the dermis and superficial subcutaneous fat and has a complex anatomical structure. Irregular skin dimpling and elevations are caused by the combination of taut septal bands and

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herniated adipose tissue. The fibrous septae anchor to the underlying muscle and extend through the hypodermal fatty tissue to the dermal layer. The fatty adipose tissue expands upward into the dermis and the septal bands harden and become inflexible causing skin irregularities characterized by septal-induced depressions and herniated fatty elevations [6]. Aging leads to reduced skin elasticity and thickness, exacerbating the cellulite topography [7] and making it recalcitrant to a wide array of treatments [8]. Histological studies show the ability of laser lipolysis to rupture adipocytes, reorganize the reticular dermis and coagulate collagen and adipose tissue [9–11]. The 1,440-nm laser treatment of cellulite has been reported to successfully treat cellulite and induce neocollagenesis [6].

Lipodystrophy can be treated with laser-assisted removal of subcutaneous fat from localized body sites using laser light at specific wavelengths known to have an affinity for adipose tissue [12,13]. Laser-assisted liposuction (LAL), 1,064 and 1,320-nm wavelengths, is frequently used in clinical practice to treat cellulite and to elicit skin tightening [14,15].

Advances in LAL have improved performance [16,17] since liposuction was first introduced in the 1980's [18]. The development of tumescent anesthesia for the administration of local anesthesia results in minimal blood loss, less bruising and postoperative soreness [4,19]. The emergence of tumescent liposuction, accompanied by reduction in diameter of the liposuction cannula, permitted fat volume extraction of up to 8 L [20].

Lysis of the adipocyte membrane by laser-assisted energy delivered to the subcutaneous adipose tissue reduces traumatic fat removal [1,11,21], increases coagulation of blood vessels leading to less bruising with more rapid recovery [11], and collagen coagulation stimulates reorganization of the reticular dermis [22] leading to skin tightening and increased skin elasticity [1,14,23,24]. Moreover, a reduced rate of touch ups has also been reported with LAL, as well as the need for touchups [7]. Touchup rates with LAL of 7.3% of 1,000 cases [25] and 3.5% of 537 cases [25] are appreciably lower than the 12–13% [26] reported in the early liposuction literature.

The 1,440-nm Nd:YAG laser equipped with a 1,000-micron directional side-firing fiber optic design, is used to treat cellulite. The 1,440-nm laser system treats each of the three structural elements of cellulite in a manner specific to the type of cellulite. Thereby, excess hypodermal fat is melted, the septae connecting the dermal and muscle layers are subsized, and dermal layer thickness is increased by a stimulating collagen along with increasing skin elasticity [6,27].

In our practice, we have used laser-assisted cellulite treatment and laser-assisted liposuction in a combined approach for the simultaneous treatment of cellulite and lipodystrophy. This report presents our clinical experience of the safety and efficacy of the simultaneous laser treatment of cellulite and laser-assisted liposuction of excess adipose tissue.

PATIENTS AND METHODS

This clinical experience study was under the supervision of Christine Petti, MD, at The Palos Verdes Plastic Surgery Medical Center and patients were recruited from her private practice. Institutional Review Board (IRB) approval was obtained.

In 2012, female patients with noticeable cellulite accompanied by mild-to-moderate lipodystrophy of the lower body, specifically the thighs and buttocks, were scheduled to receive a single treatment using the Nd:YAG laser at a wavelength of 1,440-nm along with the 1,000-micron side-firing fiber optic laser system for simultaneous treatments of both the cellulite and lipodystrophy.

To be eligible for treatment patients had to be healthy, non-smoking (must have quit 6 months prior to the procedure), male or female between ages 18 and 65 years. Patients had to be willing to consent to participate in the study, to comply with all requirements of the study, being photographed, following post-treatment care and attending all treatment and follow up visits.

Prospective patients were excluded from participation in the trial if any of the following were present: surgical/nonsurgical treatment for cellulite or lipodystrophy in past 6 months; history of thrombophlebitis, acute infections, heart failure, or keloid formation; recent antiplatelet, anticoagulant, thrombolytic, vitamin E, or anti-inflammatory therapy; intolerance to anesthesia or medications which produce a photosensitizing effect; pregnant, breast feeding, or planning a pregnancy or unable to maintain a diet and exercise routine during the study period.

Each patient signed an informed consent for the 1,440-nm Nd:YAG laser treatment of cellulite and the laser-assisted and suction-assisted lipectomy of the predetermined areas of lipodystrophy of the buttocks and/or thighs. A single surgeon experienced in both laser techniques performed treatments.

Patients were assessed at baseline by a modified Nurnberger–Muller (N–M) scale utilized to quantify the cellulite severity [28] (Fig. 1). The modified N–M scale had seven scores, 1–7 and three grades, Grade I (score: 1), Grade II (scores: 2–4), and Grade III (scores: 5–7). Female subjects with mild-to-moderate cellulite, Grade II and Grade III, accompanied by mild-to-moderate lipodystrophy of the thighs and/or buttocks were enrolled to receive one Nd:YAG laser treatment at a wavelength of 1,440-nm along with the 1,000-micron directional side-firing fiber optic laser system for simultaneous treatments of both the cellulite and lipodystrophy. The instrumentation used were the 1,440-nm Nd:YAG Cellulaze™ (Cynosure, Inc., Westford, MA), the 1,000-micron SideLaze3D™ side-firing fiber optic laser system, (Cynosure, Inc.), the ThermaGuide™ thermal sensing cannula (Cynosure Inc.), and the Smartlipo Triplex™ (Cynosure, Inc.).

Treatment areas were marked with a surgical marker in the standing position, according to previously published methods [6]. Areas of lipodystrophy were palpated and specifically marked, then cellulite areas of elevation were marked in green, areas of septal depression were marked in red and areas of lipodystrophy were marked in

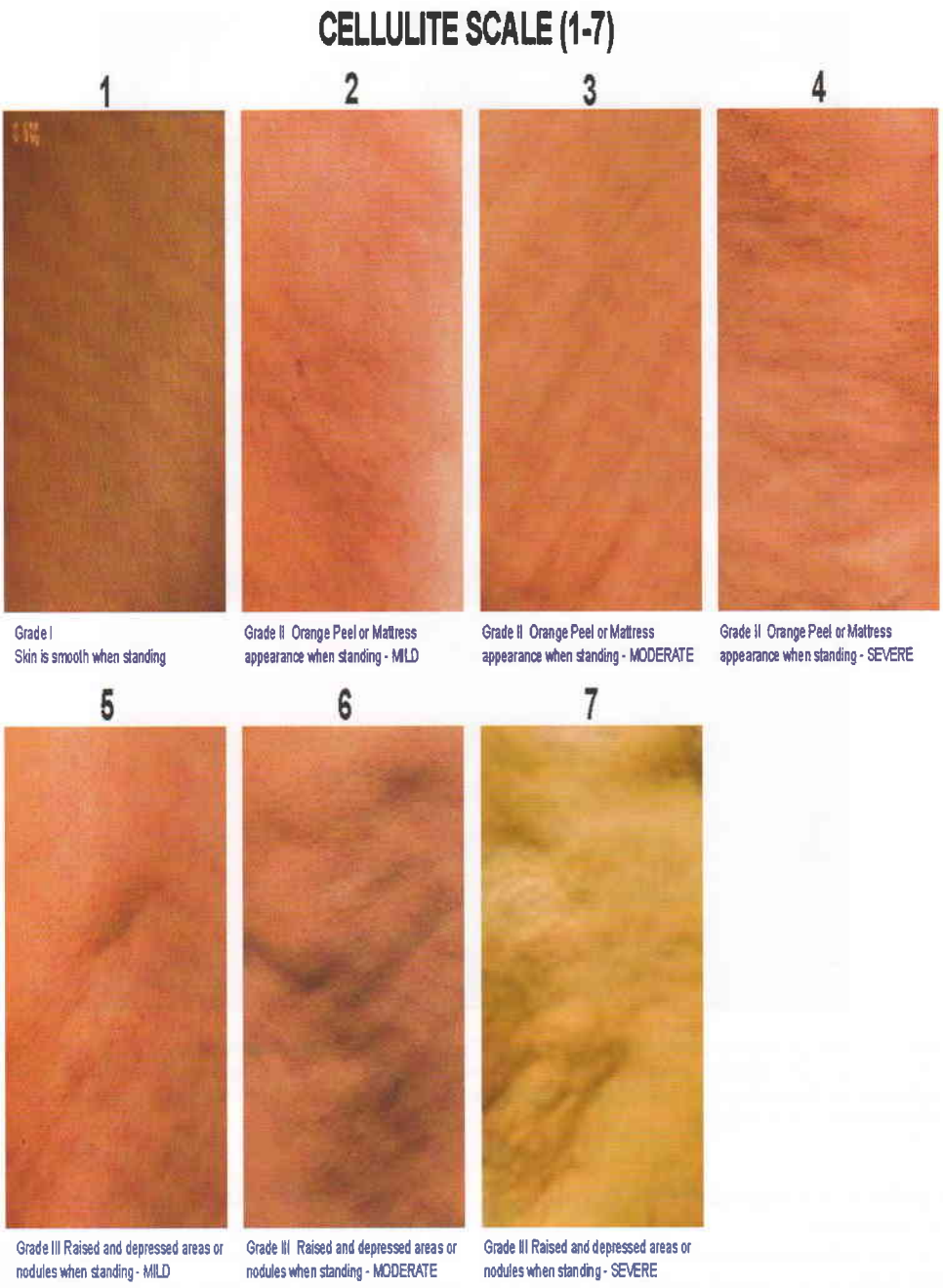

Fig. 1. Score 1—Grade I—Skin is smooth when standing; Score 2—Grade II—Mild orange peel or mattress appearance when standing; Score 3—Grade II—Moderate orange peel or mattress appearance when standing; Score 4—Grade II—Severe orange peel or mattress appearance when standing; Score 5—Grade III—Mild raised and depressed areas or nodules when standing; Score 6—Grade III—Moderate raised and depressed areas or nodules when standing; Score 7—Grade III—Severe raised and depressed areas or nodules when standing.

purple (Fig. 2). The treatment area was overlaid with a clear template and 5×5 cm squares were drawn with a surgical marker [27]. Laser procedures were performed under local anesthesia, local anesthesia with sedation or general anesthesia, based on patient/surgeon selection and extent of treatment according to current guidelines [29,30]. The length of the procedure, the percentage of time required for laser cellulite and laser liposuction treatment and the percentage of time required for liposuction varied according to the total number of 5×5 cm cellulite treatment squares and to the total volume of liposuction aspirate for each patient. The average duration of the combined laser-assisted liposuction and the laser cellulite treatment was 2–3 hours. The

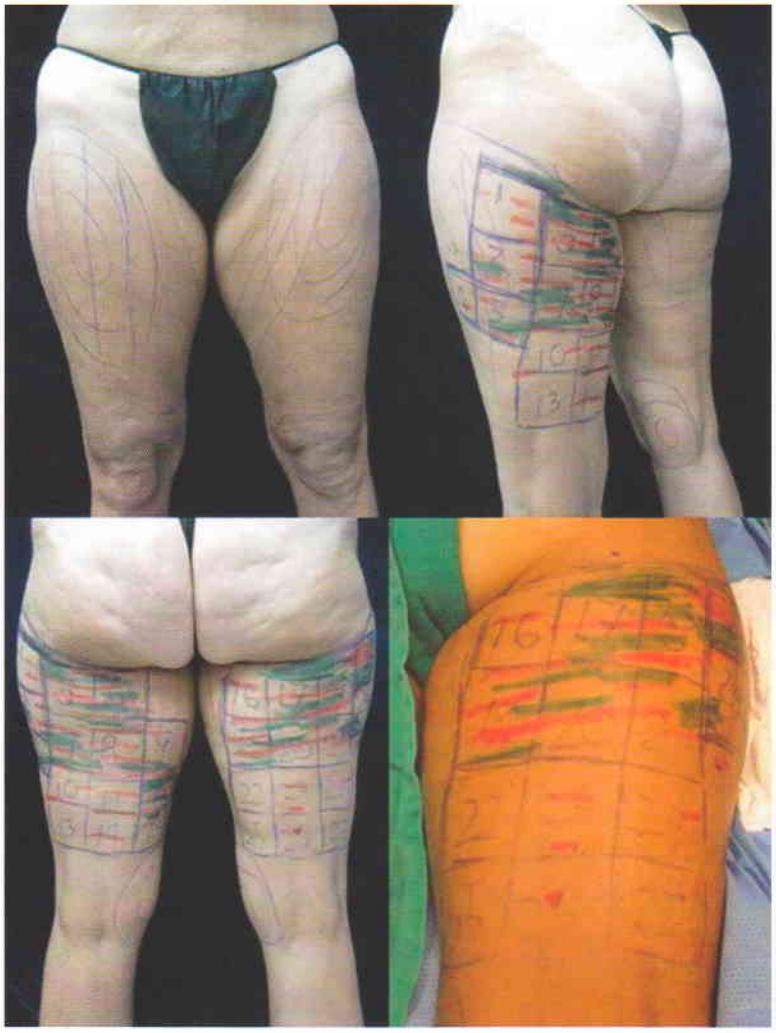

Fig. 2. Various subject markings in the areas of lipodystrophy and cellulite using different colors. Purple with crosshatching marks areas of lipodystrophy. Red marks areas of septal-induced depressions. Green marks areas of herniated fatty elevations. Purple 5 × 5 cm squares outlines area of treatment for cellulite.

amount of time added to the liposuction by the cellulite treatment was 1–1.5 hours.

Tumescent fluid was administered using the formula of 1,000 cc of Ringer's lactate, 1 cc of epinephrine 1:1000, 1% lidocaine and 12 cc of 8.5% sodium bicarbonate. The dilution of lidocaine varied; 100 cc/1,000 mg, 75 cc/750 mg, 50 cc/500 mg and the dose and dilution were determined by the number of 5 × 5 cm squares, as well as the patient's kilogram body weight. The total lidocaine administered was limited to 35 mg of 1% lidocaine per kilogram of body weight. The total amount of lidocaine administered was calculated prior to the procedure and included the lidocaine needed for both the combined cellulite and lipoplasty treatments. After the cellulite procedure, an additional volume of tumescent fluid for lipoplasty was administered into the deep subcutaneous tissue. The amount of tumescent lidocaine solution was predetermined and was based on a combination of the total amount 5 × 5 cm squares of cellulite, as well as the total amount of liposuction in all anatomical areas to be treated.

The total energy treatment dosage in joules was based upon the size of the area (number of 5 × 5 cm squares), the evaluation of the skin thickness, and the N–M grade of the cellulite. The generally used energy levels were 300–600 J for mounds and dimples and up to approximately 1,000 J, after mounds and dimples had been treated. Deliverance of energy up to an additional 300–500 J per 5 × 5 cm square was allowed at the investigator's discretion for more complex presentations [27].

Laser energy was delivered at 1,440-nm wavelength, using a 1,000-micron side-firing fiber and temperature-sensing cannula set to 45–47°C. Cellulite was treated first. The cellulite laser treatment settings were 1440-nm wavelength, 8.8 W, 25 Hz and temperature alarm settings of 45–47°C. The laser energy was initially directed subcutaneously downward to the marked herniated

adipose tissue (green), followed by a turn of the fiber 90° to the side direction to subsize the fibrotic, septal connective tissue bands in the areas of depression or dimpling (red) and finally the fiber was turned another 90° upward toward the superficial subdermal skin causing dermal tissue coagulation for a tissue-tightening effect. Usually, 4–6 of the 5 × 5 cm squares were treated simultaneously in order to distribute the energy evenly and efficiently. The total number of joules per 5 × 5 cm treatment square was calculated based on the N–M classification of cellulite score. The total number of joules and temperature were continuously monitored throughout the treatment [27].

The second phase of the two-step procedure involved treatment of the deeper adipose planes to address the lipodystrophy-induced contour deformities. Small, localized areas of lipodystrophy were treated using the 1,440-nm wavelength of energy, 10–15 W, 25 Hz, temperature alarm settings of 45–50°C using the 1,000-micron fiber optic. The laser side-firing fiber optic hand piece was held sideways to permit the laser straight- and side-beams to be directed in the same horizontal tissue plane. For large areas of lipodystrophy, the 1,000 micron side-firing fiber was removed and replaced with the 1,000-micron straight, single beam laser fiber optic using the 1,440-nm wavelength, 10–15 W, 25 Hz, and temperature alarms settings of 45–50°C.

The end point of the laser lipoplasty treatment was a lack of tissue resistance. Aspiration with suction was then applied to the intermediate and deep fatty planes to contour the pre-marked areas of lipodystrophy. The most superficial depth of actual suction of fat was 2.0 cm below the dermis. No aspiration of fat was performed at any time as part of the laser cellulite treatment. Fluid in the area of cellulite treatment was allowed to flow through the most dependent treatment incisions using soft tissue massage and milking. No drains were used.

Following completion of the dual procedures, the treated areas were injected with 0.25% Marcaine with epinephrine, 1:200,000 in order to minimize postoperative pain, as well as to permit continued vasoconstriction and hemostasis. To promote drainage of effluent and to prevent seroma formation, all lower, dependent incisions in the thigh and knee regions remained open. Incisions in the upper hip, thigh and buttock skin were closed with absorbable sutures. Each incision was dressed with abdominal and gauze absorbent pads. A compression garment was placed and worn for 2 weeks post-treatment. Subjects were followed up to 12 months.

TABLE 1. Nurnberger–Muller Scores and Improvement (Change From Baseline)

	Evaluator (average scores)			Overall score	
	1	2	3	Average	Median (SD)
Baseline	4.84	4.75	4.72	4.77	4.75 (1.2)
Post-treatment	3.09	2.72	2.75	2.85	2.75 (1.3)
inprovement	1.75	2.03	1.97	1.92	2.0 (1.2)

TABLE 2. Post-Treatment Improvement Scores (GAIS)

Average GAIS	Number of patients
1	8
1.67	2
2	3
2.3	1
2.7	1
3	1
Overall score (average) 1.58	16

5 = worse, 4 = no change, 3 = improved, 2 = much improved, 1 = very much improved.

At the end of the study, three-blinded trained evaluators were asked to grade pre- and post-treatment sets of photographs using three separate methods. The following was performed for each subject baseline and post treatment photograph; (1) Identify the correct baseline and post-treatment photograph. (2) Compare and grade the photographic set using a 5-point Global Aesthetic Improvement Scale (GAIS) for overall aesthetic change ("5-worse, 4-no change, 3-somewhat improved, 2-moderately improved, 1-very much improved"). (3) Grade each photograph using a modified Nurnberger–Muller (N–M) scale.

RESULTS

The study enrolled 18 female patients. The average age was 44 years (range 27–56 years) and average body mass index (BMI) was 22. Of the 18 patients, 15 were Fitzpatrick skin type types II and III, and three subjects were skin type IV. Thirteen (72%) of the 18 of patients were Caucasian,

TABLE 3. Physician and Patient Satisfaction

	Physician	Patients	
Satisfaction score[a]	No. of Pts	No. of Pts	How likely to recommend[b]
6	19	13	15
5	12	13	9
4	1	4	7
3		1	1
2		1	
1			
Overall scores[c] (average)	5.6	5.1	5.2

[a]Satisfaction: 6 = extremely satisfied, 5 = satisfied, 4 = slightly satisfied, 3 = slightly dissatisfied, 2 = dissatisfied, 1 = extremely dissatisfied.
[b]Likeliness to recommend: 6 = extremely likely, 5 = likely, 4 = somewhat likely, 3 = somewhat unlikely, 2 = unlikely, 1 = extremely unlikely.
[c]Patients were scored at each of two post-treatment visits. The average was calculated across all post-treatment scores.

TABLE 4. Adverse Events

	Number of patients (N = 16)			
Event	No. (%)	Mild	Moderate	Severe
Pruritis	2 (12.5)	2	–	–
Numbness	1 (6.25)	1	–	–
Telangiectasia	6 (37.5)	6	–	–
Total	9 (56.3)			

3 (1.7%) were Hispanic, and 2 (1.1%) were other ethnicities. Of the 18 patients, 16 were evaluable and two subjects did not report for follow-up.

Three-blinded evaluators assessed 32 pairs of photographs. The blinded evaluators were able to correctly distinguish between baseline and post-treatment photographs in 97% of 3×32 pairs of photographs.

The average modified Nurnberger–Muller (N–M) scale cellulite score at baseline was 4.8 ± -0.2 and the average improvement post-treatment was 1.9 ± 1.2. Paired t-test was <0.01 and showed statistically significant results from baseline.

Three blinded evaluators independently rated the severity of cellulite using the Nurnberger–Muller (N–M) scale. Comparison of evaluators' scores showed that evaluators were in 93% agreement (± 1 score). Nurnberger–Muller scores were an average baseline value of 4.77 and an average post-treatment score of 2.85, equivalent to an improvement of 1.92 (Table 1).

The average global aesthetic improvement scores (GAIS), as graded by blinded evaluation, ranged from 1 to 3 with an overall average of 1.58, corresponding to much improved/very much improved overall appearance in the subject population (Table 2).

Satisfaction was high for both physician and patients. The physician average satisfaction score for 16 patients with two follow-up visits were each 5.6, corresponding to extremely satisfied/satisfied. At each time point visit, photographs were evaluated compared to baseline photographs. The patient average satisfaction score was 5.1, corresponding to extremely satisfied/satisfied. One patient had a score of three-slightly dissatisfied at 6 weeks and a score of two-dissatisfied, at 8 months (Table 3).

Adverse events were pruritis, numbness and telangiectasia. Of the 16 evaluable patients, 6 patients (37.5%) experienced mild telangiectases, which resolved in 8 weeks (Table 4). One patient experienced mild pruritis and numbness, which resolved in 4 weeks and another patient experienced mild pruritis for 3 weeks post-treatment.

Selected patient treatments of the thighs, as well as combined thighs and buttocks are presented in Figures 3–6.

Figure 3 shows a 41-year-old female with cellulite of the posterior thighs and lipodystrophy of the posterior and lateral thighs at baseline. She had a previous history of liposuction of the buttocks and thighs. Her baseline N–M cellulite was scale 5. The 10-month post-treatment result is shown. The two-step treatment included a total of 24, 5×5 cm squares using 25,200 J (Cellulaze®) for cellulite and 3,500 J (Smartlipo TriPlex™) for lipodystrophy, yielding a combined total of 28,700 J. The total liposuction aspirate from the posterior and lateral thighs was 325 cc. The 10-month post-treatment cellulite grade was score 2, and the GAIS improvement score was 1.

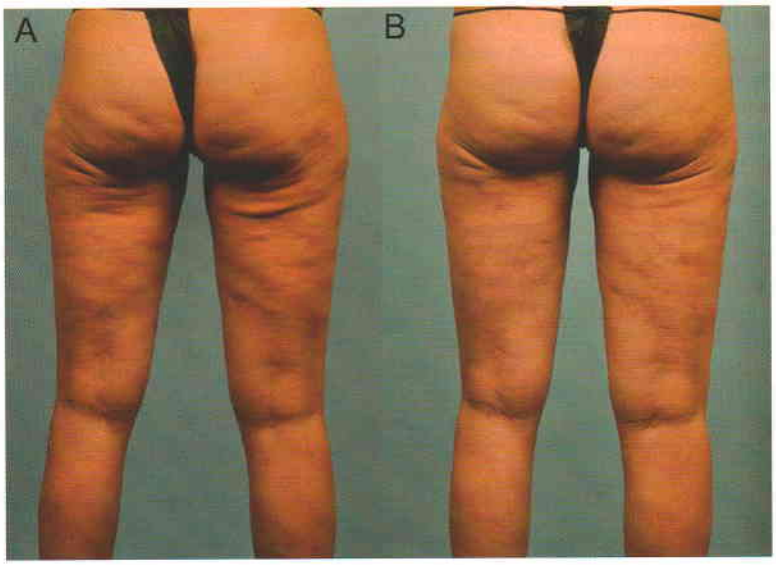

Fig. 3. **A**: This posterior view of a 41-year-old female with Nurnberger–Muller cellulite scale 5 of the posteriorthighs and lipodystrophy of posterior and lateral thighs at baseline. **B**: Ten-months post-treatment of the bilateral posterior thighs and laser-assisted lipoplasty of bilateral posterior and lateral thighs was assessed at cellulite scale 2 and lipodystrophy GAIS score of 2.

Fig. 4. **A**: This frontal view of a 27-year-old female with N–M cellulite scale 4 of the bilateral anterior thighs and lipodystrophy of the bilateral anterior, lateral, posterior thighs and knees at baseline. **B**: Six-months after cellulite laser treatment of the bilateral anterior thighs and laser-assisted lipoplasty (3,000 cc) of the circumferential bilateral thighs and knees. Her post-treatment N–M cellulite was scale 1, and the GAIS score was 1.

Figure 4 shows a 27-year-old female with N–M cellulite scale four cellulite of the bilateral anterior, lateral, posterior thighs and knees at baseline. Following treatment of a total of 24, 5×5 cm squares using 13,200 J (Cellulaze®) for cellulite and 10,200 J (Smartlipo TriPlex™) for lipodystrophy, a total of 23,400 for the procedure. The liposuction aspirate from the posterior and lateral thighs was 2,925 cc. Her 6-month post-treatment demonstrates N–M cellulite score 2, and the GAIS improvement score was 1.

Figure 5 shows a 49-year-old female with N–M cellulite scale seven of the bilateral posterior and lateral thighs and lipodystrophy of the bilateral thighs and knees at baseline. The two-step treatment included a total of 29, 5×5 cm squares using 26,100 J (Cellulaze®) for cellulite and 13,650 J (Smartlipo TriPlex™) for lipodystrophy, yielding a combined total of 39,750 J. The liposuction aspirate from the bilateral thighs and knees was 3,300–cc. After 1-year post-treatment the N–M cellulite score was 2, and the GAIS improvement score was 2.

Figure 6 shows a 56-year-old female with extensive N–M scale seven cellulite. She had previous liposuction of the buttocks and thighs. The patient was treated for cellulite and lipodystrophy. The two-step treatment included a total of 44, 5×5 cm squares using 44,000 J (Cellulaze®) for cellulite and 900 J (Smartlipo TriPlex™) for lipodystrophy, yielding a combined total of 44,900 J. The liposuction aspirate was 500 cc. After 1-year, the N–M cellulite score was two and the GAIS improvement score was 2.

Fig. 5. **A**: This 49-year-old female presented with cellulite scale 7 of the bilateral posterior and lateral thighs and lipodystrophy of the bilateral thighs and knees at baseline. **B**: One-year after laser cellulite treatment of bilateral posterior and lateral thighs and circumferential laser-assisted lipoplasty, (3,300 cc), the N–M scale was 3, and the GAIS was 2.

Fig. 6. **A**: This right posterior view of a 56-year-old female had ah N–M scale 7 of the left buttock and bilateral posterior and lateral thighs, as well as lipodystrophy of the bilateral buttocks and posterior thighs at baseline. **B**: One-year post-treatment of left buttock and bilateral posterior and lateral thighs. The post-treatment NMscale was 3, and the GAIS score was 2.

DISCUSSION AND CONCLUSIONS

This report demonstrates the capability of laser cellulite treatment and laser-assisted liposuction to integrate the laser treatment of cellulite and lipodystrophy safely and efficaciously. Overall results demonstrated improvement in all cases. The slight difference in satisfaction scores between physician and patients may be attributable to expectations about the procedure.

Cellulite and lipodystrophy are two particularly pervasive conditions, currently treated individually by laser-assisted techniques in two discrete surgical settings [14,15,23,25,26]. In order to minimize the number of surgeries and maximize results, we have developed a two-step procedure, simultaneously treating both cellulite and lipodystrophy in one surgical setting.

The clinical benefits of laser energy delivered subcutaneously are well documented and include the regeneration of collagen within the dermal matrix through tissue coagulation [1,22] and increase in skin thickness [23]. Laser lipolysis liquefies fatty tissue, coagulates small blood vessels, induces collagenesis with remodeling, and promotes tissue tightening [31].

Surgeons are now combining laser lipolysis procedures [32]. The rationale for using the Nd:YAG 1,440-nm laser liposuction system is to enhance the efficacy and the rate of lipolysis, as well as improve skin tightening, resulting in reduced operative time. In the past, traditional and laser liposuction procedures were associated with complications [21,26]. Safety measures that include a subcutaneous temperature-monitoring system and motion-sensing hand piece device have also been implemented to minimize the laser-related risks of overtreatment and associated thermal complications.

Importantly, the two-step integrated procedure; the first phase treating cellulite in the superficial fatty layer with the Nd:YAG 1,440-nm laser cellulite treatment and the second phase treating the deeper lipodystrophy with the Nd:YAG 1,440-nm laser liposuction requires a precise, skilled surgical approach in order to optimize treatment outcomes. Of paramount importance are the detailed markings of the areas of cellulite and lipodystrophy, as well as the precise, clinically correlated, pre-planned, and accurate delivery of thermal energy to the treatment areas. As with all surgical procedures, it is important to set realistic expectations with each patient. In the post-operative period, patients noted some minor sequelae of edema, ecchymosis, numbness and mild discomfort, which resolved in all patients within 3 months. All patients tolerated the procedure well and reported measurable and visible improvement, as early as 3 weeks, when the edema and ecchymoses were resolved.

Precise and accurate delivery of laser energy to the dermal-adipose tissue as well as to the deep adipose lipodystrophy has formed a new modality for the treatment of cellulite and lipodystrophy in the thighs and buttocks. Historically, body contouring using suction-assisted lipectomy techniques assisted by various adjunctive technologies, such as ultrasound, power-assisted and laser-assisted modalities have been the conventional treatments for body contour irregularities [4,11,14,23,26].

Body contour deficiencies often coexist with skin surface deformities, commonly known as cellulite. The laser-assisted treatment of cellulite using a selective, directional, side-firing fiber optic laser technique has been developed. The efficacy of this technique used alone has been documented in recent scientific literature [6].

Our experience with treating cellulite and lipodystrophy in one procedure using two compatible laser systems has been shown to be safe and effective. A laser system using the 1,440-nm wavelength and a novel side-firing fiber optic laser system can be used effectively and safely as a simultaneous, single treatment for cellulite and lipodystrophy. The parameters required to effectively and safely treat both cellulite and lipodystrophy have been clinically defined. Improvement is maintained up to 1 year. Patient and physician will welcome a single-stage procedure for combined treatment of both conditions of cellulite and lipodystrophy.

Cellulite and lipodystrophy frequently coexist, and are typically found in the buttocks and thighs. The majority of patients who have both cellulite and lipodystrophy of the buttocks and thighs do request, when seen in consultation, request to have these two conditions treated at the same time. At present, the two conditions can be effectively and

safely treated with single-stage use of the Nd:YAG 1,440-nm side-firing fiberoptic laser system for cellulite and lipodystrophy. The combined laser treatment was associated with a high degree of both patient and physician satisfaction. The guidelines and parameters to safely and effectively combine these laser procedures were evaluated in patients from our practice and follow-up assessments were made over a period of 3–6 months. The present report demonstrates the capability of the Nd:YAG 1,440-nm side-firing fiberoptic laser system to integrate the simultaneous laser treatments of cellulite and lipodystrophy with a single-stage procedure safely and efficaciously.

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